

# Shaping the Future of Functional Ingredients: Top Native Cyclodextrin Manufacturers

BINZHOU CITY, SHANDONG PROVINCE, CHINA, March 19, 2026 /EINPresswire.com/ -- The global market for functional ingredients has expanded steadily in recent years, driven by rising demand in pharmaceuticals, food processing, and personal care. Among the many compounds gaining attention, native cyclodextrins have established themselves as key functional materials due to their unique molecular structure and broad application potential. A group of specialized manufacturers, primarily based in Asia and Europe, are playing a central role in this growth by scaling up production capacity, improving product quality, and developing new products for emerging applications.

## 1. Understanding Native Cyclodextrins: Structure and Function

Native cyclodextrins are cyclic oligosaccharides produced through the enzymatic conversion of starch. The three most common types — alpha-cyclodextrin, beta-cyclodextrin, and gamma-cyclodextrin — consist of six, seven, and eight glucose units, respectively. Their defining feature is a truncated cone-shaped molecular structure with a hydrophobic interior cavity and a hydrophilic exterior surface. This structure allows cyclodextrins to form inclusion complexes with a wide range of guest molecules, effectively improving the solubility, stability, and bioavailability of various active compounds.

Beta-cyclodextrin remains the most widely produced and commercially used form, largely because of its favorable cavity size, relatively low production cost, and well-documented safety profile. According to data from several industry research firms, beta-cyclodextrin accounts for more than 60 percent of total cyclodextrin consumption worldwide.

## 2. Key Applications Across Industries

The versatility of native cyclodextrins has made them widely adopted across multiple sectors.

In the pharmaceutical industry, cyclodextrins serve primarily as drug delivery excipients. They help increase the aqueous solubility of poorly water-soluble drugs, which remains one of the major challenges in modern drug formulation. Industry reports indicate that approximately 40 percent of currently marketed drugs and nearly 90 percent of drugs in development pipelines suffer from poor water solubility. Cyclodextrins offer a practical solution by encapsulating these molecules and enhancing their absorption in the body.

In food and beverage manufacturing, cyclodextrins are used to stabilize flavors, mask undesirable tastes, and protect sensitive ingredients such as vitamins and polyunsaturated fatty acids from oxidation. Alpha-cyclodextrin, in particular, has gained recognition as a dietary fiber and has been approved as a food ingredient in several major markets including the European Union, the United States, and Japan.

The personal care and cosmetics industry also relies on cyclodextrins for fragrance stabilization, controlled release of active ingredients, and improvement of product texture. Additionally, agricultural and environmental applications — such as pesticide formulation and soil remediation — represent growing end-use segments.

### 3. Leading Manufacturers and Their Market Roles

The native cyclodextrin manufacturing landscape is concentrated among a relatively small number of specialized producers. Major players include Wacker Chemie AG in Germany, Roquette Freres in France, and several Chinese manufacturers that have expanded significantly in both production capacity and product quality over the past decade.

Among the Chinese producers, Shandong Binzhou Zhiyuan Biotechnology Co., Ltd. has built a solid position in the market. The company focuses on the research, production, and sale of cyclodextrin products, supplying customers in the pharmaceutical, food, and chemical industries across domestic and international markets. Its production base in Shandong province provides access to abundant corn starch resources, a key raw material for cyclodextrin manufacturing, which supports cost-efficient and large-scale production.

The presence of these manufacturers has contributed to greater market competition and more accessible pricing for downstream users, particularly in developing regions where demand for functional ingredients is growing rapidly.

### 4. Innovation Trends: From Raw Materials to Specialized Products

While native cyclodextrins remain the foundation of the market, manufacturers are increasingly investing in the development of modified and application-specific products. [Cyclodextrin Derivatives](#), such as hydroxypropyl-beta-cyclodextrin (HP-beta-CD) and sulfobutylether-beta-cyclodextrin (SBE-beta-CD), have become critical materials in injectable drug formulations due to their significantly higher aqueous solubility and improved safety profiles compared to unmodified beta-cyclodextrin.

[Cyclodextrin Complexes](#), in which active ingredients are pre-encapsulated within cyclodextrin cavities, are another area of active development. These ready-to-use complexes offer convenience to formulators and can reduce processing steps in pharmaceutical and food manufacturing.

Shandong Binzhou Zhiyuan Biotechnology Co., Ltd. is among the manufacturers that have expanded their product lines beyond basic native cyclodextrins to include these more specialized categories. This kind of vertical product development allows manufacturers to serve a wider range of customer needs and move into higher-value segments of the market.

Research efforts across the industry are also focused on improving enzymatic conversion efficiency, reducing waste in production, and developing novel cyclodextrin types with tailored cavity sizes for specific guest molecules. Several manufacturers have established partnerships with universities and research institutes to advance these goals.

## 5. Quality Control and Regulatory Compliance

As cyclodextrins are used extensively in pharmaceutical and food applications, strict quality control is essential. Manufacturers must comply with pharmacopeial standards — including those set by the United States Pharmacopeia (USP), European Pharmacopoeia (EP), and Chinese Pharmacopoeia (ChP) — as well as food-grade regulations such as those established by the Food and Agriculture Organization (FAO) and the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

Leading producers maintain certification under Good Manufacturing Practice (GMP) frameworks and hold ISO quality management system certifications. Traceability of raw materials, consistency of batch-to-batch quality, and rigorous testing for residual solvents and microbial contamination are standard requirements in the industry.

Regulatory approvals have expanded in recent years. For example, gamma-cyclodextrin has received Generally Recognized as Safe (GRAS) status in the United States, joining alpha- and beta-cyclodextrin which had already held this designation. These regulatory developments have helped open new market opportunities and encouraged manufacturers to invest further in production capacity.

## 6. Market Outlook and Future Directions

The global cyclodextrin market is projected to maintain steady growth in the coming years. Industry analysts estimate a compound annual growth rate (CAGR) in the range of 5 to 7 percent, supported by increasing pharmaceutical research and development activity, expanding food ingredient applications, and growing awareness of cyclodextrin functionality among formulators in emerging markets.

Several factors are expected to shape the competitive landscape going forward. First, the trend toward greener and more sustainable production methods will likely favor manufacturers with access to bio-based raw materials and efficient enzymatic processes. Second, the continued expansion of generic pharmaceutical markets in Asia, Latin America, and Africa is expected to

drive demand for cost-effective excipients including cyclodextrins. Third, ongoing innovation in derivative and complex products will create opportunities for manufacturers that commit resources to research and development.

China is expected to remain a major production hub due to its raw material advantages and established manufacturing infrastructure. At the same time, regulatory harmonization across markets may encourage more cross-border trade and collaboration between producers and end users.

For downstream industries, the availability of a reliable and diverse supply of cyclodextrin products from capable manufacturers provides a clear benefit. Producers that offer consistent quality, regulatory compliance, complete technical documentation, and application support are well positioned to capture growing demand in both established and emerging markets.

## 7. About Shandong Binzhou Zhiyuan Biotechnology Co., Ltd.

Shandong Binzhou Zhiyuan Biotechnology Co., Ltd. is a biotechnology company based in Binzhou, Shandong province, China. The company specializes in the research, development, production, and distribution of cyclodextrin and related products, serving customers in the pharmaceutical, food, cosmetics, and agricultural sectors. With a commitment to product quality and technical service, the company supplies both domestic and international markets.

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